DOCUMENT RESUME

ED 187 881 CE 025 405

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TITLE	Learning Assessment in Vocational Evaluation.
INSTITUTION	Wisconsin Univ. - Stout, Menomonie. Dept. of Rehabilitation and Manpower Services. Materials Development Center.
SPONS AGENCY	Rehabilitation Services Administration (DHEW), Washington, D.C.
PUB DATE	Apr 79
GRANT	DHEW-12-P-55307/5
NOTE	23p.
AVAILABLE FROM	Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin--Stout, Menomonie, WI 54751 ($1.00)
EDRS PRICE	MF01/PC01 Plus Postage.
DESCRIPTORS	*Disabilities; Guidelines; Instructional Development; Job Placement; Job Training; *Learning; Performance Tests; *Testing; *Vocational Aptitude; *Vocational Rehabilitation; *Work Sample Tests
IDENTIFIERS	*Vocational Evaluation

ABSTRACT

The purpose of this document is to help vocational evaluators understand (1) how the concepts of learning and performance relate to vocational evaluation; (2) why learning assessment is important; and (3) how it may be incorporated into work sample testing. The text is divided into three parts. Part 1 defines the learning assessment process. Part 2 provides the rationale for learning assessment by discussing the following reasons: assuring performance testing readiness; providing instruction; improving client awareness; and providing benefits for job placement and training. Finally, part 3 presents the procedures for practicing learning assessment. These procedures include methods of separating learning and performance, of developing appropriate instructional techniques, and of adapting standardized work sample instructions. (BM)

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LEARNING ASSESSMENT

IN

VOCATIONAL EVALUATION

BY

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U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
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Introduction

Assessing how a client learns is one of the most important functions of vocational evaluation. There are two basic reasons for this. First, the ways in which an individual can learn information certainly have a strong impact on their vocational development. All jobs, no matter how simple, require some degree of learning, yet disabilities such as blindness, deafness, mental retardation, and aphasia obviously limit some of the modes by which a person may learn. Yet, in most cases, once the learning problem has been identified, modifications of the instructional or training procedures can be made, e.g., audiotaping of written materials or sign language. Such adaptations allow handicapped persons to learn behaviors and skills which would not otherwise be possible. Thus, their personal, social, and vocational opportunities are greatly expanded.

Secondly, with regard to vocational evaluation and particularly work and job sample testing, an individual's ability to learn to follow a standardized set of instructions has a significant influence over performance capability. For if a client is unable to understand the instructions provided in a work sample, it is unlikely that he will acquire the requisite behaviors necessary to perform the assigned task. In many such cases the resulting poor performance is erroneously interpreted as indicating a lack of task related ability rather than evidence of specific or general learning disturbances. In such cases, the learning problems often remain completely undetected, and thus little or no effort is made to modify the instructional format so as to facilitate client learning.

If this problem is to be overcome, evaluators must include learning assessment as part of the evaluation process. However, the term learning assessment does not denote the traditional concept of measuring a client's IQ or so called "potential to learn." Rather it refers to evaluating and understanding how a client learns, e.g., through written instructions, oral directions, and demonstrations. Understanding how a person learns is particularly crucial when working with severely handicapped individuals who may be unable to learn a task via one instructional format like written, but who can learn the same task if another instructional technique, such as demonstration, is provided.

Before any decisions as to client capabilities are made, it is imperative that the evaluator be reasonably certain that after a standardized instructional format has been provided, the client: (1) perceived and understood the instructions, (2) was taught the proper use of the tools and equipment, (3) all the steps and motions were learned, and (4) he was made aware of the desired outcomes. If the client fails to satisfy any of these criteria, then the evaluator must provide alternative instructional procedures which will help the client learn what he is to do. It is essential that performance testing not occur until all of the aforementioned objectives are achieved.

Unfortunately, at the present time few "in-house" work samples or commercially developed work sample systems possess systematic, objective standards which outline when the aforementioned criteria are considered to have been reached by the client. Add to this problem the facts that: (1) many severely handicapped clients have subtle and complex learning disabilities which are not easily identified, and (2) often clients make a special effort to mask their learning handicaps; it is not difficult to see that assessing the

ways in which a client's learning skills influence his performance capabilities is a difficult yet critically important factor in understanding vocational potential.

The purpose of this publication is to help vocational evaluators understand: (1) how the concepts of learning and performance relate to vocational evaluation, (2) why learning assessment is important, and (3) how it may be incorporated into work sample testing. By understanding these concerns, vocational evaluators will gain important insight into the relationship among learning, performance, and vocational assessment and thus provide a more effective service to the clients.

Paul McCray, M.S.
March, 1979

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PART I

DEFINING THE LEARNING ASSESSMENT PROCESS

Learning and Performance Phases of Work Sample Testing

Ellis (1972) defined learning as "a relatively permanent process that is inferred from performance changes due to practice" (p. 4). Within this definition there are four important points to keep in mind:

> (1) Learning is an inference which means that it is not something directly observed. Thus learning is an inferred or hypothetical concept like gravity or electricity. We never see gravity directly; we observe falling objects and therefore infer that such a process exists. (2) The concept of learning is tied to performance, but is not the same as performance. Hence, a distinction is made between learning and performance. Various performance indicators are employed to infer learning such as number of correct responses, errors, percentages of correct responses, response rate, response speed, etc. (3) The concept of learning is tied to conditions of practice which serves to distinguish learning from performance changes attributable to other conditions such as fatigue, maturation, or drug states. This simply emphasizes that the conditions antecedent to learning are practice conditions as distinct from other kinds of conditions. (4) Learning is a relatively permanent process, which is an assumption which is useful in order to distinguish learning from other more temporary processes such as sensory memory or short-term memory. (Ellis, pp. 157-158)

Thus, for purposes of vocational evaluation, one may generally view learning assessment as an inferential process and performance assessment as a measurable or quantifiable representation of the extent of learning that has taken place. The most significant points to remember are: (1) learning and performance are closely related but distinct concepts, and (2) performance can be strongly influenced by the degree of learning which precedes it.

With regard to vocational evaluation, Revell and Wehman (1978) have separated the concepts of learning and performance by identifying two distinct phases of work and job sample testing. The acquisition or learning phase occurs during the period in which the client acquires the requisite skills and concepts needed to perform the task. It is at this time that the client learns what he is to do and the motions, concepts, tool uses, etc., needed to carry out the assignment. It necessarily involves various degrees of training since the evaluator instructs the client as to the desired outcomes as well as how to assemble or disassemble an object, read a chart, use a machine, etc. On the other hand, the performance or production phase follows the learning phase. During the performance phase the client actually executes the learned behaviors under formal testing conditions. For example, during the learning phase a client may have been instructed as to how to assemble an object and then was allowed to practice the assembly without regard to speed, quality, etc. However, unlike the learning phase, during the performance phase careful consideration is given to the speed, quality, etc., with which the client performed the task.

The goal of the learning phase is for the client to thoroughly understand what he is going to do as well as how to do it, i.e., he possesses all the behaviors needed to perform a given task. Assuring that a client thoroughly learns all aspects of a task prior to test performance is not an easy job. It requires the evaluator to identify measurable and concrete objectives which define when adequate learning has taken place, so that performance testing may begin. These objectives must be representative of the behaviors, skills, concepts, etc., required during the performance phase (this subject will be discussed more thoroughly in Part III). The goal of the production phase is different. In this case, the evaluator wants to obtain some sort of measure which is a valid and reliable estimate of the client's performance capability. This measure is usually a quantifiable score of some kind, e.g., percentile rank, grade equivalent, time score, errors, etc. Generally speaking, the performance score is regarded as an accurate measure of the extent of learning that has taken place providing, of course, the client's motivation, the testing environment, etc., have all been carefully considered.

Thus, one can see that learning and performance are distinct entities which share a cause and effect relationship. Learning influences performance and performance suggests the extent of learning. Failure to thoroughly achieve the goals of the learning phase will have a negative impact on performance, since the client will begin the performance phase while still lacking some of the behaviors needed to competitively perform the entire task. The end result of this problem is that if an evaluator fails to identify the client's performance problems as being related to an inadequate or incomplete learning phase, then the evaluator may easily attribute the client's poor performance to a lack of task related ability. Thus, a client may be screened out of a potential training or employment opportunity, not necessarily because of lack of ability, but because of a learning problem which prevents him from understanding what he is to do and/or how to do it.

For example, if during the learning phase, a client who cannot read above a first grade level is given a series of work sample instructions which require sixth grade reading skills, he will perform poorly during the performance phase of testing. This, however, does not necessarily mean that the client lacks the ability to do the job, instead it indicates a learning handicap, i.e., a limited ability to follow written instructions. In order to determine if the client really lacks the ability to do the task, the instructions must then be provided by other methods, e.g., oral or demonstration. Such modifications of test administration procedures are recommended by CARF Standard 3.4.3.1.1.2 which states:

> appropriate adaptive assessment tools and methods shall be used whenever possible with individuals having sensory, communication, or other functional impediments (e.g., visual, hearing, speech, language, cultural, or learning disabilities) which might invalidate otherwise standardized procedures. (p. 28, Standards Manual for Rehabilitation Facilities)

In addition to this, the joint CARF-VEWAA publication, VEWAA-CARF Vocational Evaluation and Work Adjustment Standards with Interpretive Guidelines

and VEWAA Glossary*, provides a clearer interpretation of this standard.

> The intent of this standard is to assure that evaluation programs modify or use already modified tests, work samples, or other assessment tools to assure that they (evaluation tools) can accurately reflect the person's aptitudes, abilities, potential, etc. For example, using a short, timed test such as the WRAT to measure the math abilities of a person with severe motor problems or the administration of a test written in English to a person whose functional language is Spanish, would not meet the intent of this standard. Possible adaptations might include the use of recorded directions or Braille directions for the blind, translated materials for foreign language groups, or the use of tests that have been developed for or account for disability groups in their norms, etc. (p. 5)

Thus, one can see that modifying standardized instructional formats is one important method of facilitating learning among individuals with specific or general learning disabilities. Such modifications are, however, only one component of the overall learning assessment process. Viewed in the broadest sense, learning assessment is the process of systematically evaluating how a person learns, identifying any limitations that exist, and developing appropriate adaptive techniques which are designed to facilitate learning and, thereby, help the client overcome his learning handicaps.

*Available from: Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin - Stout, Menomonie, Wisconsin 54751. The cost is $1.00 per copy.

PART II

RATIONALE FOR LEARNING ASSESSMENT

Having defined learning assessment, it is now important to look at some of the reasons why this process is important.

Assuring Performance Testing Readiness

When a client's performance is substandard, it is not enough to simply note it, automatically attribute it to lack of ability, and predict that the client's potential in that area is limited. Instead, the evaluator must take the assessment process one step further in an effort to understand why the client's performance was substandard. There may be a variety of reasons for poor performance including:

1. inadequate instructional procedures (client doesn't understand what to do)
2. environmental factors (poor testing conditions)
3. motivation (overly anxious to perform well, or disinterested)
4. lack of task related ability.

As suggested previously, inadequate instructional procedures are one of the major causes of misinterpreting client performance. If, during the learning phase, an evaluator communicates instructions to a client and the client does not understand the directions, he will be unable to perform the task. All too easily this can lead to the erroneous conclusion that the client lacks ability in the tested area rather than that the client did not thoroughly understand what to do simply because the instructional format required him to utilize skills which were limited by his learning disability. By including learning assessment as part of the evaluation process, the evaluator is forced to consider whether or not the instructional procedures provided in the learning phase were appropriate for the individual. This activity helps assure that a valid picture of client performance capability emerges.

For example, suppose an evaluator is working with a severely retarded client who expresses an interest in working as a circuit board assembler. Based on the client's tested and expressed interests, the evaluator decides to administer a circuit board assembly work sample which utilizes a standardized written instructional format during the learning phase. If under these circumstances the client fails to acquire the skills needed for performance testing, should the evaluator interpret this as necessarily meaning that the client lacks the task related ability and his potential in this area is, therefore, limited? The answer is certainly no, for such an assumption is premature. The evaluator must first determine if the learning problem is the result of other factors, e.g., inadequate instructional procedures, test environment, or lack of motivation.

In this case, the evaluator must seriously question whether or not a written instructional format was appropriate for an individual with severely limited reading skills. Is there a reasonable possibility that the client could learn the skills and concepts if other instructional techniques were provided? The answer is yes; therefore, the evaluator must break away from the standardized instructional format (in this case, written) and try other instructional methods. For example, the evaluator might provide the instructions orally, give

demonstrations, or use a combination of the two techniques in order to attempt to facilitate client learning. If, after thoroughly exhausting all instructional strategies, the client is still unable to learn the task, then he must consider the test environment and the client's motivation. These two factors are frequently discussed in much of the more traditional psychological testing literature. That they can affect performance testing is certainly true. For example, if a series of tests require a quiet, uninterrupted setting, yet the evaluator allows people to randomly enter and exit the room, talk to one another, play radios, etc., then one can definitely say that the test environment was poorly controlled. Such distractions are likely to have a negative impact on performance and, therefore, the client's performance may not be representative of his true abilities. Similarly, if a client is not motivated or interested in taking a test, his resulting performance may not reflect his real abilities. For example, some clients may randomly fill in answer sheets simply because they don't want to take the time to think through the questions. Other clients may be so anxious to perform well that they "freeze-up" and cannot answer questions or perform tasks that would normally be easy for them. Thus, one can see that the evaluator must consider whether or not these two factors, along with the instructional format, were controlled well enough so as to limit their affect on performance. If they were well controlled, then the evaluator may be relatively certain that the client's poor performance and difficulty learning the task suggests a lack of ability in the area of circuit board assembly. If, on the other hand, the evaluator finds that the client can learn the information if the instructional format is modified, he will then have gained significant insight into the client's learning capabilities and will be able to apply this knowledge to future testing situations as well as training and placement recommendations.

Instructional Techniques

There are four basic methods of providing instructions to a client. They include: written, oral, demonstration/modeling, and hands on.

1. Written Method

The written method is, perhaps, the most complex since it requires the learner to read information such as manuals, charts, maps, diagrams, etc., as well as analyze and synthesize the data into a meaningful whole so that the desired behavioral changes may be made. For example, an auto mechanic is often required to read repair manuals in order to correct complicated mechanical problems.

Because the amount of time required to develop the skill of reading may range from several months to many years, learning any information or skill via written instructions is relatively difficult no matter how simple the actual task might be. For example, sorting several different nuts and bolts might be a relatively simple job; however, if a client is required to read instructions prior to performance, then a significant prerequisite skill (reading) will prevent many clients from performing the work sample even though they may have the physical and intellectual capabilities to do the actual work.

Dyslexia is an example of a disability which limits one's ability to read. Although an individual may have above average intelligence, if he is required to perform even the simplest task by reading a set of instructions, he may not be able to perform the job. However, in such a case, the evaluator should

recognize that the performance problem reflects a specific learning disturbance and not necessarily a lack of task related ability. Therefore, the evaluator should provide the instructions by means of one of the other modes in order to determine the client's actual performance capabilities.

2. Oral Method

Like the written technique, the oral method is verbally oriented and requires relatively sophisticated skills. The individual must listen to information and organize it into an integrated pattern, yet unlike the written method, years of formal training are not necessary. Rather, this skill typically develops through normal maturation so that the infant begins to understand many of the verbal commands of its parents and as the child's language skills develop, so does its understanding of speech.

This method, however, is not entirely dependent upon the physical hearing mechanism. A handicapped individual may be able to hear sounds quite normally, but his ability to organize, interpret, and understand auditory information may be completely deficient.

For example, a client with receptive aphasia may be able to hear every word his evaluator speaks, but he is unable to organize it into meaningful information. Thus, he has exceptional difficulty making the desired behavior changes or performing an assigned task. More importantly, for the evaluator, because the degree of impairment may vary, some clients will be able to understand a portion of the verbal instructions. They may be able to comprehend concrete but not abstract concepts. Thus, they may give the impression that they have learned the task and understand all the instructions when in fact they have not. In such a case, it takes professional expertise on the part of the evaluator to discern the interaction among disability, learning, and performance. If the evaluator is not aware of how learning can affect performance, then he may erroneously assume that the client lacks the ability to perform the task rather than observing that the relationship among the client's learning style, the teaching style, and the test administration procedure was not conducive to obtaining a valid and reliable picture of the client's capabilities.

3. Demonstration/Modeling Method

The last two learning styles, demonstration/modeling and hands on, are essentially nonverbal methods. The demonstration/modeling technique requires the evaluator to demonstrate the assigned task, and the client then models his performance after the evaluator. The evaluator may perform a portion of the task, then ask the client to model the behavior(s), then the evaluator performs another operation, etc., until the entire task is completed and each of the separate steps tied together. Or the evaluator may perform the entire task and either ask the client to parallel his performance while it is taking place, or wait until the evaluator's entire demonstration is completed. In any case, this method requires minimal language skills and, as such, is simpler than the written or oral methods.

4. Hands On Method

The hands on technique has been widely advocated for use with the severely mentally retarded. Initially, it is similar to the demonstration/modeling

method in that it requires the evaluator or trainer to demonstrate a behavior or series of behaviors and then have the client attempt to model the behaviors. However, it is different from the demonstration/modeling technique in that when the client fails to correctly perform a task, the instructor physically manipulates the client's fingers, hands, etc., so that the desired behaviors, e.g., brake assembly, occur. Individual behaviors are tied together in an organized sequence, and as the client learns each of the steps of the task, he begins to make the physical movements independently so that when learning is completed, it is no longer necessary for the supervisor to regularly guide the client's performance. This method is different from the demonstration/modeling technique in that the client's physical behaviors and movements may be controlled by the evaluator*. If a client is unable to independently imitate the correct behaviors, then the appropriate action is guided by the evaluator until the client can regularly perform the task accurately and independently. With the demonstration/modeling technique, however, demonstrations are usually repeated while the desired behavior changes are made, but there is no systematic effort to physically manipulate client's motions.

Thus, one can see that there are many different ways to provide instructions to clients, and when working with individuals with learning disabilities it is imperative that the instructional format used be compatible with the client's learning capabilities. Because this is a verbally oriented society, most job training programs emphasize verbal techniques. Likewise, most individual work samples and work sample systems use verbal instructional techniques (often in combination with demonstration/modeling techniques). Yet many severely handicapped people, which often make up the majority of vocational evaluation referrals, have very poor verbal skills. Thus, the structure of the tests themselves can create barriers which inherently impede client performance if the appropriate adaptations are not made. By recognizing the importance of providing appropriate instructional procedures, evaluators will often be able to identify adaptations which may be made in the learning phase, so that clients can learn to satisfactorily perform jobs which would otherwise be considered beyond their abilities.

Implications for Improved Client Awareness

Another important benefit of learning assessment is that the client gains insight into his specific learning capabilities. For example, a client who is not verbally oriented may have had a great deal of difficulty in school because he could not learn verbally oriented information. Consequently, he developed a self-concept in which he viewed himself as generally unable to learn most new skills and concepts. However, during learning assessment the client may find that there are other nonverbal ways to learn information, e.g., demonstration/modeling, hands on, which allow him to succeed where he had previously failed. This leads to increased self-awareness which has practical application: the client asks an employer to demonstrate a task rather than providing him with a written manual.

*For a more thorough discussion of this subject the reader is referred to the film, "Try Another Way," available from the Materials Development Center, Stout Vocational Rehabilitation Institute, University of Wisconsin - Stout, Menomonie, Wisconsin 54751. Rental fees are: 3 days - $15.00; 5 days - $20.00.

Benefits for Job Placement/Training

Finally, when the client is considered for job placement or training, limitations in his learning skills are very important since job success is likely to be related to his ability to learn the new job tasks via the instructional mode offered by the employer. For example, suppose that through learning assessment the evaluator finds that a client cannot learn most tasks by means of written formats. Unless the evaluator or referral source are certain that a particular job does not require written learning skills, or that the employer is willing to make the necessary adaptations in the training program, then the client should not be placed on the job even though he may have the potential to learn it if other instructional procedures were offered. Imagine the hapless client who is unable to comprehend written instructions but who is referred to a job on which the foreman typically hands new workers an operator's manual and tells them to read it and start to work on the machinery. It is quite likely that in such a situation the client will perform poorly and the foreman will incorrectly attribute this to a lack of job related ability. The client may then be discharged from the job because he is viewed as being unable to perform adequately. Learning assessment helps prevent these problems since the referral source and evaluator can determine if any adaptations are needed as well as employer willingness to make them before job placement takes place.

In this part we have identified some of the reasons why learning assessment is important. First, it encourages evaluators to look at why a person cannot learn to perform a given task rather than simply noting that the client failed to perform adequately. This is important because evaluators often fail to look at the reasons for poor performance. Instead, they often automatically interpret poor performance as indicative of a lack of task related ability. This, however, is not always true since poor performance or learning difficulties may be the result of several factors including: (1) inadequate instructional or learning formats, (2) motivation, (3) uncontrolled test environment, or (4) lack of ability. By including learning assessment as part of the evaluation process, the evaluator is determining the extent to which the instructional format of the learning phase of testing was compatible with the client's learning capabilities.

Learning assessment is also important because many handicapped people can only learn by one or two specific methods. A client may be unable to learn a task via a verbal format, but if the same information is provided through a nonverbal format, he may be able to learn to do the job. This fact has important ramifications for job placement and training since once the learning deficit is identified, evaluator, client, referral source, placement person, and prospective employer can work together to modify the job training experience so as to overcome the client's limitations. Finally, learning assessment also provides the client with insight into how he learns. This information can help the client learn to better cope with the learning and training requirements of the job as well as his own personal, social, and educational experiences outside of the work environment. The client finds that he can learn concepts and skills which he had previously believed were beyond his ability. All of the aforementioned benefits make learning assessment an invaluable component of the overall vocational evaluation process, since it contributes to a valid and reliable understanding of client limitations and capabilities.

PART III

PRACTICING LEARNING ASSESSMENT

Gold (1973) has stated that with regard to the severely retarded:

> The basic concept of work samples appears to provide the most fruitful approach to evaluation. However, major changes in present usage are necessary. Acquisition and prediction must be separated. The length of time and conditions necessary to learn various tasks should be separated from how fast production is after the tasks have been learned. If both acquisition and production data are obtained on a variety of tasks and levels of difficulty, then highly reliable and descriptive data will be obtained and training will necessarily occur simultaneously with evaluation. (p. 129)

Gold's statement, however, not only applies to the severely retarded, but other handicapped people as well. Individuals with learning disabilities such as aphasia or dyslexia will often perform below their true abilities if the instructional format of the learning phase is not compatible with their own unique learning abilities.

Recognizing the significance of separating learning and performance leads to addressing the problem of how this may be practically accomplished within a work sample testing framework. The phrase, separating learning and performance, refers to the process of insuring that the client has thoroughly learned all aspects of what he is to do before he is required to perform a task. This assures that there will not be any significant level of continued learning during performance testing since the client has learned what to do during the learning phase. Thus, his performance will be an accurate reflection of his production capability since it is not contaminated by continued learning, e.g., learning how to correctly use the tools, the test answer sheets, etc. The basic problem then is how does an evaluator determine when the learning phase is completed, i.e., sufficient client learning has taken place, and the client is, therefore, ready to begin performance testing.

Methods of Separating Learning and Performance

In order to effectively separate learning and performance and reliably determine when a client has learned what he is to do, there are two important measures which must be taken.

1. Work samples must have objective criteria which are measurable and define when adequate learning has taken place.

2. The skills and concepts that must be acquired during the learning phase must be representative of the skills and concepts required during the performance phase.

1. Establishing Objective Criteria

With regard to the first requirement, in order to reliably determine when adequate client learning has taken place, evaluators must have measurable and concrete standards which define what constitutes adequate learning. This is

most easily accomplished by identifying specific objectives which the client must achieve during the learning phase. The evaluator may then compare the client's learning phase performance with the standardized objective criteria of the learning phase. In this way, the evaluator has a relatively easy job of determining if any client has mastered the learning phase and is prepared for the performance phase. For example, suppose an evaluator decides to administer a circuit board assembly work sample. The manual specifies that during the learning phase of assessment, the client must, "independently assemble five consecutive circuit boards with 100% accuracy prior to performance testing." This statement establishes specific criteria which define when adequate client learning has taken place as well as provides a standardized level which all clients must achieve prior to performance testing. It should be noted that there is no reference to time or speed of production because at this stage the important factor is whether or not the client can learn to accurately perform all phases of the task. Ninety percent accuracy is not acceptable nor are only three consecutively accurate assemblies. Likewise, according to the standard, five consecutive and accurate assemblies with assistance from the evaluator or other persons is also inadequate. The skills which the client must master prior to performance testing are concrete and measurable, and the overall effect of this approach is that at the conclusion of the learning phase, all clients who will proceed to the performance phase will have acquired the same skills and concepts necessary for performance testing. In other words, the evaluator can be reasonably certain that each client has learned the task and thus, poor performance is not likely to be due to inadequate instructional or learning procedures.

However, in spite of the advantages of this procedure, it still has one major limitation. The problem is choosing the number of correct trials which are believed to be necessary in order to assure that adequate learning can occur. In the previous example, it was stated that five consecutive correct trials was the prerequisite to performance testing. How was this number arrived at? The answer is that it is a subjective decision on the part of the work sample developer. Perhaps fewer trials would be adequate, but in this case the developer is certain that five consecutive correct assemblies are enough to insure that the client thoroughly understands what he is doing. Although lengthy and expensive statistical analyses should be performed in order to determine a certain minimum number of correct trials as indicating that learning has occurred, this approach is usually impractical. The work sample developer must, therefore, concentrate on establishing adequate criteria so as to be reasonably certain that a client will understand what to do.

2. Establishing Representativeness

Establishing specific behavioral objectives alone will not, however, necessarily guarantee that a client thoroughly learns a task prior to performance testing, unless the learning phase skills are representative of those required for the performance phase. For example, suppose that a sorting work sample requires a client to correctly sort five differently shaped plastic chips, e.g., round, oval, square, hexagon, and rectangular. The behavioral criteria to be achieved during the learning phase, however, only state that as prerequisite to performance testing, "the client will independently sort fifteen chips into three separate piles according to shape, with 100% accuracy." The client is then given several round, square, and oval chips which he must learn to sort according to the aforementioned criteria. The problem with this situation is that although specific behavioral criteria were established, they are not representative of all the skills required for the performance phase. In

this instance the client is only required to discriminate among three different shapes during the learning phase, yet in the performance phase, he must be able to differentiate five shapes, i.e., square, round, oval, rectangular, and hexagonal. Thus, the behaviors acquired during the learning phase are not representative of all those required for the performance phase, since it cannot be assumed that learning to differentiate among square, round, and oval implies the ability to discriminate the other two shapes equally effectively. The learning phase criteria should be rewritten to read, "the client will independently sort 25 chips of five different kinds (round, square, oval, rectangular, and hexagonal) into five equal piles according to shape, with 100% accuracy, prior to performance testing." This statement clearly identifies learning phase criteria which are representative of performance phase skills.

Another example of this problem is the case wherein a client is allowed to learn a task at less than 100% accuracy during the learning phase but is then penalized for less than 100% accuracy during the performance phase. For example, the behavioral criteria might state that the client must, "independently assemble ten consecutive widgets with a minimum of 75% accuracy on each unit" during the learning phase. When this level is achieved, the client may then proceed to the performance phase where at the conclusion of testing he finds that he has been penalized for performing at a level which he learned was acceptable in the learning phase, e.g., all widgets lacking 100% accuracy are thrown out in counting up total units assembled. In this case the client has unfairly learned to perform at a level which is not representative of the performance phase criteria. Thus, the instructional procedure should be viewed as inadequate and any predictions as to performance capability should take this problem into account.

Assuring learning phase representativeness is a difficult but necessary task. It essentially requires that the evaluator identify the performance he wants and then develop learning phase instructional and experiential procedures which will insure that the client: (1) can perceive and understand the instructions, (2) can be taught the proper use of all the tools and equipment used in the performance phase, (3) can learn all the steps and motions required in the performance phase, and (4) can be made aware of the desired result. Perhaps the best way to achieve this is to systematically identify each of the performance phase behaviors through techniques such as job analysis or task analysis, and then incorporate these behaviors, albeit on a smaller scale, into the learning phase. For example, if the performance phase of a mail sorting work sample requires a client to correctly sort three hundred envelopes alphabetically and numerically, then the evaluator might have twenty practice envelopes which the client must, "sort independently, and with 100% accuracy, by name and number, prior to performance testing." Such an approach is a reasonable effort on the part of the evaluator to insure representativeness during the learning phase, without getting involved in lengthy and time-consuming statistical analyses of the performance phase behaviors.

Thus, one can see that the learning phase must be representative of the performance phase. Otherwise, even though the client may master all the behaviors identified in the learning phase, he may still not have acquired all of the behaviors necessary for test performance. In such a case it is very difficult for an evaluator to determine the extent to which poor performance was the result of lack of ability or test administration inadequacies. Yet this relationship must be recognized and understood if a valid picture of the client's abilities is to emerge.

Developing Appropriate Instructional Techniques

One important point to keep in mind is that the standardized instructional format provided in a work sample manual should be the same as the method used to train employees for the same or similar jobs in competitive industry. Most training programs utilize a verbal format, and although the ability to follow written instructions may not always be required, nearly all jobs require some degree of ability to follow oral instructions. Practically speaking, most training situations use a combination of instructional techniques, e.g., written, oral, and demonstration. Thus, if several learning styles are necessary for satisfactory job performance, then each method should be incorporated into the work sample. Otherwise, clients may be screened out of jobs they can actually perform, or they may be placed in jobs which they cannot perform because their learning style is not compatible with the training format.

For example, if a job training program requires reading, but the work sample utilizes a demonstration/modeling instructional procedure, then the non-reading client may be able to perform the work sample; but when referred for job placement, the employer may discharge him due to inability to follow the reading oriented training program. If, on the other hand, the work sample simulates the learning patterns used on the job, then the evaluator can more reliably determine if the client can follow the instructional procedures that are offered on the job, and if not, what adaptations in the training may be made, and is the employer willing to make the necessary adaptations. Thus, the special needs, limitations, and capabilities of the client's learning skills are given careful consideration. In any case, the major concern when designing learning phase instructional formats should be to provide learning formats which parallel industry rather than formats which are convenient for the evaluator, e.g., written formats for all work samples so the evaluator won't have to spend time reading instructions to clients. If a client cannot learn the material by the standardized format, then other methods must be tried and these adaptations must be kept in mind when considering job placement or training.

Adapting Standardized Work Sample Instructions

Even though a work sample may have objective criteria, be representative, and have appropriate instruction techniques, there is still a problem as to what should be done when a client fails to complete the learning phase by following the standardized instructional format. Should the same instructions be repeated several times until the client actually understands them or the evaluator decides that the client cannot learn them? Can testing automatically be discontinued if the client cannot follow the instructions after one or two administrations? Should the evaluator proceed to performance testing regardless of whether or not a client has learned what to do? Should the instructions be modified so as to facilitate client learning? These are difficult questions and one must keep in mind that work sample administration procedures have generally emphasized the importance of providing the same standardized instructions to all clients. Yet, it has already been noted that although some clients are unable to learn a task via one instructional format, they may be able to learn the same task if a different format is provided. Thus, one cannot assume that because a client fails to complete the learning phase following the standardized format, that he necessarily lacks the task related abilities. Therefore, other instructional techniques, e.g., written, oral, demonstration/modeling, or hands on must be provided to the client when he cannot follow the standardized instructions. It is only by doing this that the evaluator may determine if the

client is capable of learning the task regardless of the learning phase instructional format used.

For example, suppose a sorting work sample is administered to a severely retarded client. The work sample contains specific behavioral criteria which define when the learning phase is completed and the criteria are representative of the performance phase. The instructional format parallels that used in industry, e.g., a combination of oral and demonstration. Yet, the client is unable to master the skills and concepts outlined in the behavioral criteria. In this case, should the evaluator necessarily interpret the client's difficulty as indicative of a lack of task related ability? The answer is no, for until the evaluator has provided all of the other instructional formats, he cannot be certain that the client cannot learn the task.

In this case, because the client cannot read, a written format would not have to be provided. The evaluator might attempt to separate the demonstration/modeling and oral techniques and provide them separately. If the client still cannot learn the information, then the evaluator should try the hands on technique. If the client still cannot learn the task, then the evaluator is at least certain that the client's learning problem is not due to inadequate instructional procedures. He must then attempt to determine if it is the result of: (1) the testing environment, (2) motivation, or (3) lack of ability.

There is no standard procedure for choosing other formats when the standard one does not appear to be satisfactory. However, a good general rule to follow is to keep the technique chosen as close to the actual training format of industry as possible and usually provide secondary techniques which are simpler than the standardized format. For example, if a written instructional format is inadequate because of learning disability like dyslexia, then the evaluator might first provide oral instructions which are also verbally oriented. If this fails, then he may proceed to nonverbal techniques, e.g., demonstration/modeling and, finally, hands on. Similarly, if a client cannot learn a task following a nonverbal technique such as demonstration/modeling, then the evaluator should offer the simpler, nonverbal, hands on technique rather than the more complex written or oral methods.

Whenever an evaluator finds it necessary to break away from a standardized instructional technique, he should carefully note what other techniques were used, why they were necessary and the degree of effectiveness. Evaluators should also observe how much additional training was needed during the learning phase and the extent of supervision required. This information provides important data for job placement and possible redesign of job training experiences.

Breaking away from standardized instructional procedures is important for three reasons:

1. It reduces the probability of evaluators misinterpreting performance, e.g., automatically attributing poor performance to lack of ability rather than considering inadequate instructional procedures.

2. It increases evaluator and client understanding of the latter's learning skills, e.g., written, oral, demonstration/modeling, and hands on.

3. It provides valuable information regarding client learning ability when considering placement or training potential, e.g., job training redesign.

The advantage of this approach is that client, referral source, and evaluator obtain a thorough and reliable picture of client capabilities and limitations. The basis of this understanding is knowledge of how a client learns. Dunn (1971) pointed out that:

> The result of this approach to work sample instructions is that the actual instructions given to the clients will not be 'standardized' (in the sense of having one set of instructions which are used for all clients), but the outcome of the instructional process will be 'standardized' (in the sense that all clients will have the same level of task mastery when they begin the work sample). When the work sample is administered, rate of performance can be reliably assessed and meaningful comparisons of the differences between clients can be made. Additionally, since it has already been determined that the client can perform the task with accuracy, the effects of increased performance rate or quality can be determined. (p. 2)

Thus, one can see that the advantages of this approach are twofold:

1. Emphasis is placed on standardizing the outcome of the acquisition or learning phase rather than the instructional technique. This insures that all clients possess the same essential skills when they begin performance testing.

2. Primary effort is placed on simply determining whether or not a client can or cannot learn to perform a task. Concern over predicting future levels of productivity is minimized. Such predictions tend to screen "slow learners" out of jobs or training programs in which they might be able to function if they were given additional training or time to learn the task(s). The basic fact that a client can perform a job, regardless of speed, suggests the potential for improved performance with additional training. This is particularly important when assessing severely handicapped clients who have general or specific learning disabilities.

It should be understood that it is not being advocated that because there are four basic instructional techniques, every work sample must contain four separate sets of standardized instructions. Such an approach would be time-consuming and costly. In addition to this, the majority of clients will be able to complete the learning phase of a work sample by following the standardized instructions, since many clients will not have learning problems, e.g., clients with orthopedic disabilities. What is being suggested is that one standardized instructional format which simulates industry should be developed for each work sample. When adaptations are necessary, the evaluator should be able to intuitively modify the standardized instructions so as to facilitate client learning and satisfy the behavioral criteria outlined for the learning phase.

In Part III we have discussed methods of separating learning and performance and pointed out that when clients cannot learn a task via the standardized training format, then other techniques which may be more compatible with their learning patterns must be provided.

Separating learning and performance essentially requires the evaluator to identify, in concrete and measurable terms, the behaviors which he wants the client to possess at the conclusion of the learning phase. These behaviors

must be representative of those required in the performance phase and the standardized instructional format should parallel the training format used in competitive industry. Once this is accomplished, the evaluator has a clearly defined standard which allows him to determine when a client has satisfactorily learned what he is to do and is, therefore, ready for performance testing.

Of equal importance is the fact that when a client cannot learn a task by means of the standardized instructional format, it cannot automatically be assumed that this is due to lack of task related ability. Rather, it may be the result of other factors including: (1) inadequate instructional or learning procedures, (2) testing environment, and (3) motivation. In order to assess the adequacy of the instructional procedures, the evaluator must provide other learning formats which may be more compatible with the client's own unique learning style. In choosing a different learning format the evaluator should begin with the one that is most similar to the standardized format, i.e., verbal vs. nonverbal techniques, and generally work from a more complex to a simpler format.

The net effect of separating learning and performance and providing a variety of instructional techniques is that the learning phase of work sample testing is standardized. That is to say that at the conclusion of the learning phase, all clients who will progress to the performance phase will possess the same essential skills required for performance. Thus, a more valid and reliable understanding of client performance is possible, e.g., poor performance is not likely to be the result of inadequate instructional or learning procedures. Additionally, a more thorough understanding of client learning capabilities is developed and this provides important information for job placement and training.

SUMMARY

Learning assessment is a process which attempts to systematically identify and explain how a person learns. It is important because all jobs require some degree of learning, yet if a person has learning deficits which have not been identified, the potential for misinterpreting performance problems as indicative of a lack of task related ability is great. However, once a client's learning problems are thoroughly understood, evaluator, client, counselor, and employer can often adapt the work/training environment so as to facilitate competitive performance.

Performance and learning are two closely related but distinct concepts which form the basis of learning assessment. With regard to vocational evaluation, learning and performance can be separated by identifying the learning and performance phases of work sample testing. The learning phase is the period during which the client acquires all the behaviors needed to perform a task. It necessarily involves some degree of training since it is at this stage that the evaluator instructs the client in the skills, concepts, motions, etc., needed to perform the job. The performance phase, on the other hand, follows the learning phase and is the period wherein the client is actually required to produce the learned behaviors under formal testing conditions. The two phases should be separated by identifying observable and measurable behaviors which the client must master prior to performance testing. The behaviors must be representative of the behaviors required for performance testing and the instructional format used during the learning phase should parallel that used in industry for similar jobs. This procedure results in the development of concrete and measurable standards which define when the client has completed the learning phase and is ready for performance testing.

Four basic instructional methods have been discussed--written, oral, demonstration/modeling, and hands on. The first two techniques are verbally oriented and more complex than the other two nonverbal methods. Although most people can learn by all of these modes, some individuals with specific or general learning disabilities are only able to learn by one or two methods. Thus, if they are given instructions via a format which is not compatible with their learning styles, the resulting performance may not be representative of their true abilities simply because they did not thoroughly understand the instructions. Unfortunately, in many of these cases, the poor performance is commonly erroneously attributed to lack of ability rather than inadequate instructional procedures.

Perhaps the single most important point for evaluators to keep in mind is that if a client cannot learn a task via one standardized instructional method, then it is imperative that alternative instructional formats be offered. This is primarily because a person with a learning disability such as aphasia or mental retardation may be unable to learn certain information via one instructional technique but could learn the same information if another instructional technique was provided. Additionally, in some cases clients will be able to point out their learning problems, but in many other instances they will not be fully aware of their handicaps or they may attempt to hide them from the evaluator. Both of these problems emphasize the importance of evaluators systematically examining the reasons for performance problems and identifying clients who have potential learning deficits which are adversely affecting performance. This procedure is certainly far more beneficial than simply

recording instances of performance problems without trying to determine if the difficulties are related to subtle learning problems.

The benefits of separating learning and performance are many. First, evaluators gain a more reliable and valid picture of client capabilities once they are certain that the client: (1) perceives and understands the instructions, (2) knows the proper use of the tools and equipment, (3) learned all the steps and motions, and (4) is aware of the desired result. Assuring that these objectives are achieved is one of the major functions of the learning phase of work sample testing. Once these criteria are satisfied, substandard client performance is not likely to be the result of inadequate instructional formats. The evaluator may then examine other possible causes such as client motivation, testing environment, and lack of ability.

The second major advantage of separating learning and performance is that the behaviors which the evaluator wants the client to master during the learning phase are identified. Thus, measurable and observable criteria which define adequate pre-performance phase learning are established. All clients who proceed to performance testing will, therefore, possess the same essential, task related behaviors. Emphasis is placed on standardizing the outcomes of the learning phase as opposed to the instructional technique used.

Additionally, as a result of learning assessment, the client thoroughly learns and understands what he is to do before he is required to perform a task so evaluator, referral source, and client have a sound understanding of how the latter learns. Learning problems and their implications for performance interpretation are evaluated. This process has important implications for employment and training since once learning deficits are identified and understood, methods of adapting instructional formats so as to facilitate client learning may be developed. Thus, clients can be placed in jobs or training programs which, without learning assessment, might mistakenly be regarded as beyond their abilities.

In conclusion, it should be understood that the learning assessment process can also be incorporated with other vocational evaluation techniques. Job site, situational assessment, and job sample testing all require the client to learn new skills and concepts which must be mastered before an individual can be expected to successfully perform the job. Regardless of the assessment technique used, it is always necessary for the vocational evaluator to be certain that the instructional techniques provided are compatible with the client's learning abilities. If they are not, the evaluator must adapt the learning situation by providing alternative instructional techniques which may help clients learn the necessary behaviors. By satisfying this important principle, the evaluator gains a more reliable and valid understanding of the client's vocational strengths and limitations and thus a better service is provided. Most important, however, the client also benefits because there emerges a better and more accurate understanding of his abilities.

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